

# TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

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July 22, 2004

TO: Internal File

THRU: Pamela Grubaugh-Littig, Permit Supervisor, Task Manager

FROM: Peter H. Hess, Environmental Scientist III/Engineering, Team Lead *PHH by an*

RE: Sealing South Portals, Canyon Fuel Company, LLC., SUFCO Mine, C/041/002, Task ID #1965

## SUMMARY:

The permittee submitted an application to the Division on June 21, 2004 to permit the sealing of the two intake portals known as the South Portals. The U. S. Department of Labor, Mine Safety and Health Administration is recommending to the permittee that the entries be reclaimed and sealed due to the deterioration of that facility from a safety perspective. The submitted amendment modifies the plan approved in Section 5.4.2.7 (discusses backfilling of mine openings from the outside) and Section 5.5.1 of the SUFCO mining and reclamation plan.

Prior to the interception of a sand channel in the north end of the longwall panels located in the Pines Tract, a portal breakout in Muddy Creek had been planned. The encountered geologic condition has required a revision to the mine planning in this area of the permit. Thus, a break out in Muddy Creek will not occur. The submitted revisions to the text merely delete any reference to the previously proposed Muddy Creek breakout.

Prior to initiation of this Division review, comments from the USFS were received relative placement location of fill, restoration of approximate original contour, sediment control measures, and stabilization of the backfill until more permanent stabilization measures can be implemented. All of these have been addressed within this document.

## TECHNICAL ANALYSIS:

## ENVIRONMENTAL RESOURCE INFORMATION

Regulatory Reference: Pub. L 95-87 Sections 507(b), 508(a), and 516(b); 30 CFR 783., et. al.

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**MAPS, PLANS AND CROSS SECTIONS OF RESOURCE INFORMATION**

Regulatory Reference: 30 CFR 783.24, 783.25; R645-301-323, -301-411, -301-521, -301-622, -301-722, -301-731.

**Analysis:**

**Permit Area Boundary Maps**

**Surface and Subsurface Ownership Maps**

The application to reclaim the South Portals contains two plates that have been revised. PLATE 5-6, LAND OWNERSHIP AND PERMIT AREA MAP has been submitted to remove all reference to the portals in Muddy Creek. These had been anticipated as having a need for development. As noted elsewhere within this document, the interception of a sand channel in the northern end of the longwall panels located in the Pines Tract has eliminated the need for this portal area. There are no other changes in the Plate. Surface ownership remains unchanged and continues to be the United States of America, under management of the Manti LaSal and Fish Lake National Forests.

Revised PLATE 5-6 has been P.E. certified by Mr. Wes Sorensen, Utah registered professional engineer.

PLATE 5-2C, DETAIL OF PORTAL SURFACE FACILITIES will be discussed elsewhere in this document.

**Findings:**

The revision necessary to PLATE 5-6 meets the minimum regulatory requirements of this section.

**OPERATION PLAN**

**MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS**

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

**Analysis:**

**Mining Facilities Maps**

### **Certification Requirements**

The submittal received on June 24, 2004 (Task ID #1965) includes a revised PLATE 5-2C, DETAIL OF PORTAL SURFACE FACILITIES. The proposed revision includes: 1) the removal of the 1" = 100' plan view of the Muddy Creek portals area; and 2) the addition of two mine seals and backfill material to the 1" = 100' plan view of the South Portals area. The revised PLATE 5-2C is P.E. certified by Mr. Wes Sorensen, Utah registered professional engineer.

As noted elsewhere in this document, a change in geology in the northern end of the Pines Tract negated the need to develop the Muddy Creek portals. Also, the reclamation and permanent sealing of the South Portals is to commence upon Division approval of this submittal.

The proposed PLATE revision is necessary to keep the mining and reclamation plan for this permit area current.

#### **Findings:**

The minimum regulatory requirements of this section have been met.

## **RECLAMATION PLAN**

### **POST MINING LAND USES**

Regulatory Reference: 30 CFR Sec. 784.15, 784.200, 785.16, 817.133; R645-301-412, -301-413, -301-414, -302-270, -302-271, -302-272, -302-273, -302-274, -302-275.

#### **Analysis:**

The approved mining and reclamation plan contains a commitment in Volume 1, Chapter 5, page 5-79 relative to preservation of the approved post mining land use; **"The disturbed area will be backfilled and regraded in a manner that supports the approved post mining land use."** This commitment is adequate to ensure that the South Portals will be reclaimed in a manner meeting the minimum requirements of the R645 coal rules.

#### **Findings:**

The approved mining and reclamation plan meets the minimum regulatory requirements of this section.

## **APPROXIMATE ORIGINAL CONTOUR RESTORATION**

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

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### Analysis:

Approximate original contour is discussed in the approved mining and reclamation plan in Volume 1, Chapter 5, page 5-79, section **5.5.3.1, Disturbed Area Backfilling and Grading**. "The pre-SMCRA cut slopes are shown as part of the pre-1977 disturbance on Plate 5-2B." Although the South Portals are pre-SMCRA, the breakout area is not a cut slope. Plate 5-2B depicts cut slopes in the East Spring Canyon area (extended facilities) where the main mine facilities are located. However, although the South Portals are not specifically addressed relative to approximate original contour restoration, the permittee's attitude toward compliance with the State program is felt to be adequate to ensure that the requirements of this section will be met.

### Findings:

The minimum regulatory requirements of this section have been met.

## BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

### Analysis:

#### Backfilling and Grading On Steep Slopes

In order to reclaim the area, it will be necessary to haul the necessary fill volume through the mine, and place it as close as possible to the opening, such that laborers can place it utilizing wheel barrows and hand tools. Topsoil material will also have to be placed in this manner. Thus both subsoil and topsoil will have to be hauled and alternately placed, starting at the extremes of the South Portal's disturbance and working the fill toward the openings until one employee can pull the material toward the final opening creating closure. Analysis of Plate 5-2B reveals that the entire disturbed area associated with the South Portals encompasses approximately 0.298 acres. However, most of this is down slope of the two portals that will be reclaimed, and same will not require backfilling or grading to achieve the minimum regulatory requirements.

Section **5.5.3.3 Exposed Coal Seams, Acid- and Toxic-Forming Materials, and Combustible Materials**, Chapter 5, Volume 1, page 5-80 of the approved SUFCO Mine plan under **Exposed Coal Seams** states that "coal seams that were exposed during mining will be covered with a minimum of four feet of nontoxic and noncombustible materials during final backfilling and grading. This cover material may consist of material removed during grading of the site (see Section 5.4.2.2), subsoil, and/or topsoil." Thus, at a very minimum, four feet of material must be placed to cover the opening for each of the two entries developed as well as the coal seam between the two entries.

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Analysis of Plate 5-2C, Detail of Portal Surface Facilities, South Portals reveals that the two entries were developed leaving a coal pillar approximately twenty-five feet in width between the two entries. Thus, the exposed coal seam in that area is at least sixty feet in width.

The compaction of placed material is addressed in Volume 1 Chapter 5, page 5-69, of the SUFCO MRP, of the section labeled **Backfilling and Compaction**. **“Side hill embankments, where the width (including bench cuts) is too narrow to allow access by compaction equipment, will be initially constructed by end-dumping, but only to a width to allow compaction equipment access. After this is achieved, the fill will be placed in lifts and compacted (this is where laborers and wheelbarrows may be necessary) to at least 85 percent of maximum proctor density. Lifts will be placed with a thickness when compacted of no more than eight inches. Care will be taken to ensure that fill materials are not frozen during placement or compaction. Any areas that are damaged by freezing will be reconditioned, reshaped, and recompacted to at least 85 percent of maximum Proctor density. All fill placement and compaction activities will be overseen by an experienced engineer.”**

The use of wheeled or tracked equipment is not possible in this area, due to the fact that no machinery access is available from the lower Canyon. The construction of a road to access the South Portals would require a huge amount of disturbance at a prohibitive cost. Thus, **any compaction of the placed soils will be achieved by the weight of the placed material itself, from laborers walking or pushing wheelbarrows about the area, or by handheld gasoline powered compaction equipment.** The portals exist in a very steep (approximately a 1:1 slope). In order to stabilize the area, it will be necessary to hand entrench rocks into the backfilled material. Hand roughening in the topsoil material would also be necessary to provide sediment control and enhance moisture retention for revegetation potential.

Upon the completion of the placement of the noncombustible material and the topsoil, other noncombustible material will be placed and compacted in the entries to a distance that is at least twenty-five feet into the mine from the outcrop. This is mandated by 30 CFR, 75.1711-2, and is correspondingly mandated by the State of Utah Coal mining rule R645-301-551. Upon the completion of the back stowing and compacting of the twenty-five feet of incombustible fill material, an MSHA / Division approved mine seal will be constructed.

### Findings:

The approved mining and reclamation plan, in correlation with the Task ID #1965 submittal meets the minimum regulatory requirements of this section.

## MINE OPENINGS

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**Analysis:**

Due to a concern aired by the U. S. Department of Labor, Mine Safety and Health Administration regarding the condition of the South Portals at the SUFCO Mine, the permittee is proposing to reclaim the two intake portals. Page 5-76, Chapter 5, Section 5.4.2.7 discusses **Final Abandonment of Mine Openings and Disposal Areas**. The South Portals were broken out from inside the mine, and thus, there is no machinery access from the lower Canyon (Convulsion) to the elevation of the Hiawatha coal seam, which is the elevation at which the South Portals exist. Thus, all backfilling of the portals must occur from within the mine.

The South Portals were developed by driving entries in the Hiawatha coal seam to the outcrop, until daylight was encountered. This was done prior to the passage of SMCRA in August of 1977 (the mine was initially developed in 1941). As such, no topsoil was salvaged during the development of the area.

Analysis of Plate 5-2C, Detail of Portal Surface Facilities, South Portals reveals that the two entries were developed leaving a coal pillar approximately twenty-five feet in width between the two entries. Thus, the exposed coal seam in that area is at least sixty feet in width.

Upon the completion of the placement of the noncombustible material and the topsoil, other noncombustible material will be placed and compacted in the entries to a distance that is at least twenty-five feet into the mine from the outcrop. This is mandated by 30 CFR, 75.1711-2, and is correspondingly mandated by the State of Utah Coal mining rule R645-301-551. Upon the completion of the back stowing and compacting of the twenty-five feet of incombustible fill material, an MSHA / Division approved mine seal will be constructed.

**Section 5.4.2.7 Final Abandonment of Mine Openings and Disposal Areas, Abandonment of Openings** in Chapter 5, Volume 1, page 5-76 of the approved mining and reclamation plan provides a description of the procedure to be followed to seal the entries. "All mine openings will be sealed at least 25 feet inside the mine opening. Prior to installation of the seal, all loose material will be removed from the roof, floor, and rib of the mine within three feet of the seal area." In order to prepare for the placement of soil volume in the two mine openings, it will be necessary to carefully remove extensive wood lagging which was used to support the openings over the years. It is believed that the condition of this support structure is what prompted MSHA to require the reclamation of the two portals.

**"The seal will then be constructed using solid concrete blocks (average minimum compressive strength of 1,800 psi) with nominal dimensions of six inches high, eight inches wide, and sixteen inches long. Mortar will consist of one part cement, three parts sand, and no more than seven gallons of water per sack of cement. The seal will be recessed at least 16 inches deep into each rib and 12 inches deep into the floor. No recess will be made into the roof. In the bottom course, each block will be laid with its long axis parallel to the rib.**

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**The long axis in succeeding higher courses will be perpendicular to the to the long axis of the blocks in the preceding course. An interlaced pilaster will be constructed in the center. The seals will have a thickness of approximately sixteen inches.”**

**“Alternatively, a cast in place MSHA approved seal will be installed with a minimum thickness of three feet and with a minimum compressive strength of 200 psi.”**

The previous description of the method to be used for the seal construction is approved by the Division.

The decision to remove all references to a portal breakout(s) in Muddy Creek was necessary due to the interception of adverse geologic conditions in the northern end of the longwall panels in the Pines Tract. No portals will occur in the Muddy Creek area; thus no references to same are necessary within the mining and reclamation plan.

**Findings:**

The approved seal design meets the minimum regulatory requirements of this section. The removal of text from the mining and reclamation plan referencing any topic relative to breakouts in the Muddy Creek area is necessary to update the approved plan.

**RECOMMENDATIONS:**

Task ID #1965 should be approved, as the contents meet the minimum regulatory requirements of the sections of the R645 rules reviewed within this document.